

LIST OF CLAIMS

1 - 7. (Cancelled)

8. (Currently Amended) A plant-activating agent comprising an effective amount of a substance selected from the group consisting of:

- (1) fatty acids or derivatives thereof, wherein said fatty acids or derivatives thereof are selected from the group consisting of pentaerythritol fatty acid ester, polyglycerol fatty acid ester, sorbitan fatty acid ester and sucrose fatty acid ester,
- (2) organic acids or derivatives thereof, wherein said organic acids or derivatives thereof are selected from the group consisting of heptonic acid, oxalic acid, malonic acid, lactic acid, tartaric acid, adipic acid, glutaric acid and glyceric acid, potassium salts thereof, sodium salts thereof, ammonium salts thereof, alkanolamine salts thereof, fatty amine salts thereof, alkyl citrates thereof, alkyl citric acid amides thereof, polyvalent carboxylates thereof, carboxamides thereof, glyceric acid alkyl esters thereof and glyceric acid alkyl amides thereof,
- (3) lipids or derivatives thereof, wherein said lipids or derivatives thereof are selected from the group

consisting of tallow, lard, fish oil, whale oil, palm oil, palm-stearin oil, castor oil; monoacyl glycerol, diacyl glycerol, phosphatidylserines, phosphatidylethanolamines, sphingomyelin, phosphatidic acid, sphingolipid, glycolipid, terpenoid, sterols, and alkylene oxide adducts to a mixture of fat and/or oil and glycerol, wherein the average number of moles added of alkylene oxide is from 1 to 30,

- (4) alcohols or derivatives thereof, wherein said alcohols or derivatives thereof are selected from the group consisting of methanol, ethanol, propanol, butanol, lauryl alcohol, myristyl alcohol, cetyl alcohol, stearyl alcohol, eicosanol, behenyl alcohol, phytol and oleyl alcohol; polyoxyethylene stearyl ether, polyoxyethylene cetyl ether; distearyl ether, stearyl cetyl ether, polyoxyalkylene dialkyl ethers, ethylene glycol, diethylene glycol, polyethylene glycol, erythritol, pentaerythritol, pentitol, batyl alcohol, isostearyl glyceryl ether, behenyl glyceryl ether, decyl polyglucoside, stearyl polyglucoside, N-lauroyl N-methylglucamide, and N-stearyl N-methylglucamide,
- (5) amines or derivatives thereof, wherein said amines are selected from the group consisting of monomethylamine, dimethylamine, trimethylamine, a polyamine that is

selected from a primary, secondary and tertiary long chain amine, diamine and triamine having a C₈₋₃₀ hydrocarbon group or alkyl group, or a salt thereof, and wherein said derivatives are selected from a quaternary ammonium salt, choline or a salt thereof, and a fatty acid salt of choline,

- (6) amino acids or derivatives thereof, wherein said amino acids or derivatives thereof are selected from the group consisting of ornithine derivatives, creatine derivatives, and acylated glutamine derivatives,
- (7) proteins or derivatives thereof, wherein said proteins or derivatives thereof are selected from the group consisting of glutathione, oxytocin, casein, keratin, hemoglobin, albumin and collagen,
- (8) nucleic acids or derivatives thereof, wherein said nucleic acids or derivatives thereof are selected from the group consisting of ribonucleic acids, deoxyribonucleic acids, decomposed products thereof, nucleoside phosphates thereof and nucleotides which are constituent units thereof,
- (9) natural extracts, wherein said natural extracts are selected from the group consisting of hinokitiol, chitin, chitosan, chlorella-decomposed products and wood vinegar,

(10) fermentation residues, wherein said fermentation residues are selected from the group consisting of fermentation products obtained by amino acid fermentation, mixed organic acid fermentation, glycerol fermentation and penicillin fermentation,
and

(11) vitamins, wherein said vitamins are selected from the group consisting of ascorbic acid, coenzymes thereof, and vitamins A, D, E and K,

wherein said agent shows not less than a 5% improved reproduction degree of unicellular green cells within 15 days after an effective concentration of the plant activator has been given to a plant, wherein said improved reproduction degree is calculated by the following formula:

$$\begin{aligned} &\text{Improved reproduction degree in unicellular green cells (\%)} \\ &= [(P_1 - P_0) / P_0] \times 100 \end{aligned}$$

wherein P_0 represents the reproduction amount of unicellular green cells when the plant-activating agent is not used, and P_1 represents the reproduction amount of unicellular green cells when the plant-activating agent is used.

9. (Previously Presented) The plant-activating agent as claimed in the claim 8, satisfying at least one of the following (a), (b), (c), (d) and (e):

- (a) an improved degree of SPAD chlorophyll value of said plant of not less than two points,
- (b) an increase in the weight of said plant of not less than 10%, wherein the weight of said plant is either a fresh weight or a dry weight,
- (c) an improved degree of leaf-area of said plant of not less than 5%,
- (d) an increase in the concentration amount of ascorbic acid in a blade part of said plant of not less than 5%, and
- (e) a decrease in the concentration amount of nitrate ion in a blade part of said plant of not less than 10%.

10. (Previously Presented) The plant-activating agent of claim 8 or claim 9, wherein said unicellular green cells are chlorella and said substance has not less than a standard improved reproduction degree of 5% in reproduction of said chlorella.

11. (Previously Presented) The plant-activating agent of claim 8 or claim 9, wherein said agent is given in the form of an aqueous solution or an aqueous dispersion in an amount of 0.01 to 5000 ppm in terms of an effective or active component per a culturing solution of green cells.

12. (Previously Presented) The plant-activating agent of claim 8 or claim 9, wherein said agent is given by spraying in the form of a solid agent that is in a granular form, a dust formulation, an aqueous solution or an aqueous dispersion of the plant-activating agent, and is given as an active component in a proportion of 0.001 to 3000 kg per 1000 m².

13. (Previously Presented) The plant-activating agent of claim 8 or 9, further comprising a surfactant or a chelating agent.

14. (Previously Presented) A method for assisting the growth of a plant, comprising the step of:

applying to the plant an effective amount of the plant-activating agent of claim 8.

15. (Previously Presented) A method for assisting growth of a plant comprising the step of:

applying to said plant an effective amount of the plant-activating agent of claim 9.

16. (Previously Presented) A method for assisting growth of a plant comprising the step of:

applying to said plant an effective amount of the plant-activating agent of claim 10.

17. (Previously Presented) A method for assisting growth of a plant comprising the step of:

applying to said plant an effective amount of the plant-activating agent of claim 11.

18. (Previously Presented) A method for assisting growth of a plant comprising the step of:

applying to said plant an effective amount of the plant-activating agent of claim 12.

19. (Previously Presented) The method for assisting growth of a plant according to claim 14 or 15, wherein said method comprises the step of giving said effective amount of the plant-activating agent directly as a solid fertilizer in the form of a dust formulation or a granule formulation.

20. (Previously Presented) The method for assisting growth of a plant according to claim 14 or 15, wherein said method comprises the step of spraying a diluted aqueous solution containing said effective amount of the plant-activating agent directly on phylloplanes, stems or fruits of said plant.

21. (Previously Presented) The method for assisting growth of a plant according to claim 14 or 15, wherein said method comprises the step of injecting a diluted aqueous solution containing said effective amount of the plant-activating agent into soil.

22. (Previously Presented) The method for assisting growth of a plant according to claim 14 or 15, wherein said method comprises the step of contacting the roots to said plant with water that includes therein a diluted and mixed aqueous liquid for hydroponics that contains said effective amount of the plant-activating agent.

23. (Previously Presented) A plant-activating agent comprising an effective amount of a substance selected from the group consisting of:

- (1) fatty acids or derivatives thereof, wherein the fatty acids or derivatives thereof are selected from the group consisting of pentaerythritol fatty acid ester, polyglycerol fatty acid ester, sorbitan fatty acid ester and sucrose fatty acid ester,
- (2) organic acids or derivatives thereof, wherein said organic acids or derivatives thereof are selected from the group consisting of heptonic acid, oxalic acid,

malonic acid, lactic acid, tartaric acid, adipic acid, glutaric acid and glyceric acid, potassium salts thereof, sodium salts thereof, ammonium salts thereof, alkanolamine salts thereof, fatty amine salts thereof, alkyl citrates thereof, alkyl citric acid amides thereof, polyvalent carboxylates thereof, carboxamides thereof, glyceric acid alkyl esters thereof and glyceric acid alkyl amides thereof,

- (3) lipids or derivatives thereof, wherein said lipids or derivatives thereof are selected from the group consisting of tallow, lard, fish oil, whale oil, palm oil, palm-stearin oil, castor oil; monoacyl glycerol, diacyl glycerol, phosphatidylserines, phosphatidylethanolamines, sphingomyelin, phosphatidic acid, sphingolipid, glycolipid, terpenoid, sterols, and alkylene oxide adducts to a mixture of fat and/or oil and glycerol, wherein the average number of moles added of alkylene oxide is from 1 to 30,
- (4) alcohols or derivatives thereof, wherein said alcohols or derivatives thereof are selected from the group consisting of methanol, ethanol, propanol, butanol, lauryl alcohol, myristyl alcohol, cetyl alcohol, stearyl alcohol, eicosanol, behenyl alcohol, phytol and oleyl alcohol; polyoxyethylene stearyl ether, polyoxyethylene

cetyl ether; distearyl ether, stearyl cetyl ether, polyoxyalkylene dialkyl ethers, ethylene glycol, diethylene glycol, polyethylene glycol, erythritol, pentaerythritol, pentitol, batyl alcohol, isostearyl glyceryl ether, behenyl glyceryl ether, decyl polyglucoside, stearyl polyglucoside, N-lauroyl N-methylglucamide, and N-stearyl N-methylglucamide,

- (5) amines or derivatives thereof, wherein said amines are selected from the group consisting of monomethylamine, dimethylamine, trimethylamine, a polyamine that is selected from a primary, secondary and tertiary long chain amine, diamine and triamine having a C₈₋₃₀ hydrocarbon group or alkyl group, or a salt thereof, and wherein said derivatives are selected from a quaternary ammonium salt, choline or a salt thereof, and a fatty acid salt of choline,
- (6) amino acids or derivatives thereof, wherein said amino acids or derivatives thereof are selected from the group consisting of ornithine derivatives, creatine derivatives and acylated glutamine derivatives,
- (7) proteins or derivatives thereof, wherein said proteins or derivatives thereof are selected from the group consisting of glutathione, oxytocin, casein, keratin, hemoglobin, albumin and collagen,

- (8) nucleic acids or derivatives thereof, wherein said nucleic acids or derivatives thereof are selected from the group consisting of ribonucleic acids, deoxyribonucleic acids, decomposed products thereof, nucleoside phosphates thereof and nucleotides which are constituent units thereof,
- (9) natural extracts, wherein said natural extracts are selected from the group consisting of hinokitiol, chitin, chitosan, chlorella-decomposed products and wood vinegar,
- (10) fermentation residues, wherein said fermentation residues are selected from the group consisting of fermentation products obtained by amino acid fermentation, mixed organic acid fermentation, glycerol fermentation and penicillin fermentation, and
- (11) vitamins, wherein said vitamins are selected from the group consisting of ascorbic acid, coenzymes thereof, and vitamins A, D, E and K,

wherein said agent shows not less than a 5% improved reproduction degree of a callus of green cells within 15 days after an effective concentration of the plant activator has been given to a plant, wherein said improved reproduction degree is calculated by the following formula:

$$\begin{aligned} & \text{Improved reproduction degree in a callus of green cells (\%)} \\ & = [(P_1 - P_0) / P_0] \times 100 \end{aligned}$$

wherein P_0 represents the reproduction amount of a callus of green cells when the plant-activating agent is not used, and P_1 represents the reproduction amount of a callus of green cells when the plant-activating agent is used.

24. (Previously Presented) The plant-activating agent as claimed in the claim 23, satisfying at least one of the following (a), (b), (c), (d) and (e):

- (a) an improved degree of SPAD chlorophyll value of said plant of not less than two points,
- (b) an increase in the weight of said plant of not less than 10%, wherein the weight of said plant is either a fresh weight or a dry weight,
- (c) an improved degree of leaf-area of said plant of not less than 5%,
- (d) an increase in the concentration amount of ascorbic acid in a blade part of said plant of not less than 5%, and
- (e) a decrease in the concentration amount of nitrate ion in a blade part of said plant of not less than 10%.

25. (Previously Presented) The plant-activating agent of claim 23 or claim 24, wherein said callus of green cells is a liverwort

callus and said substance has not less than a standard improved reproduction degree of 5% in reproduction of said liverwort callus.

26. (Previously Presented) The plant-activating agent of claim 23 or claim 24, wherein said agent is given in the form of an aqueous solution or an aqueous dispersion in an amount of 0.01 to 5000 ppm in terms of an effective or active component per a culturing solution of said callus of green cells.

27. (Previously Presented) The plant-activating agent of claim 23 or claim 24, wherein said agent is given by spraying in the form of a solid agent that is in a granular form, a dust formulation, an aqueous solution or an aqueous dispersion of the plant-activating agent, and is given as an active component in a proportion of 0.001 to 3000 kg per 1000 m².

28. (Previously Presented) The plant-activating agent of claim 23 or 24, further comprising a surfactant or a chelating agent.

29. (Previously Presented) A method for assisting the growth of a plant, comprising the step of:

applying to said plant an effective amount of the plant-activating agent of claim 23.

30. (Previously Presented) A method for assisting growth of a plant comprising the step of:

applying to said plant an effective amount of the plant-activating agent of claim 24.

31. (Previously Presented) A method for assisting growth of a plant comprising the step of:

applying to said plant an effective amount of the plant-activating agent of claim 25.

32. (Previously Presented) A method for assisting growth of a plant comprising the step of:

applying to said plant an effective amount of the plant-activating agent of claim 26.

33. (Previously Presented) A method for assisting growth of a plant comprising the step of:

applying to said plant an effective amount of the plant-activating agent of claim 27.

34. (Previously Presented) The method for assisting growth of a plant according to claim 29 or 30, wherein said method comprises the step of giving said effective amount of the plant-activating

agent directly as a solid fertilizer in the form of a dust formulation or a granule formulation.

35. (Previously Presented) The method for assisting growth of a plant according to claim 29 or 30, wherein said method comprises the step of spraying a diluted aqueous solution containing said effective amount of the plant-activating agent directly on phylloplanes, stems or fruits of said plant.

36. (Previously Presented) The method for assisting growth of a plant according to claim 29 or 30, wherein said method comprises the step of injecting a diluted aqueous solution containing said effective amount of the plant-activating agent into soil.

37. (Previously Presented) The method for assisting growth of a plant according to claim 29 or 30, wherein said method comprises the step of contacting the roots to said plant with water that includes therein a diluted and mixed aqueous liquid for hydroponics that contains said effective amount of the plant-activating agent.